

REMARKS

Claims 1-33 are pending in the application. Claims 1-33 stand rejected. Claims 1, 23 and 29-30 are amended with this response. The abstract is amended. No new matter is added by the amendment. The Examiner's objections and rejections are addressed below in substantially the same order as presented in the office action.

Objections to the Application

Claim 1 is amended to address the Examiner's objection to the use of "capable of" and to clarify that the actuator is disposed within the well borehole to effect transmitting signals from a first location within a well borehole to a second location.

Claim 23 is amended by replacing the word "enhancing" with the word "--inducing--", which is clearly supported by the application as filed. The claim is also amended to replace the semicolon appearing at the end of the claim with a period. The amendment is for the sole purpose of correcting clerical errors and not for the purpose of overcoming prior art.

Claim 29 is amended to replace the word "the" appearing before "predetermined frequency" to provide proper antecedent language.

Claim 30 is amended to correct the dependency to claim 29 instead of claim 19.

The abstract is amended to address the Examiner's objection by deleting "The present invention includes."

35 U.S.C. § 102

Claims 1, 2, 5, 9, 11, 13, 14, 18, 21-24, 28, 29, and 31 stand rejected under 35 U.S.C. § 102(b) as being anticipated Petersen et al. U.S. Patent 4,314,365.

The claimed invention relates to generating an acoustic signal within a well borehole

and transmitting the signal to another location through an elongated member such as a coiled tube, a jointed drill pipe or a production tube. In contrast, the '365 reference only teaches an acoustic transmitter 15 attached to a drill string 10 **"at a point at or above the surface."** See column 4, lines 9-11. In addition, the reaction mass 232 is also located at the surface with the transmitter 15 as shown in figure 4. ✓

Amended claim 1 includes the limitation of "an actuator coupled to the elongated member and the reaction mass at the first location within the well borehole, the actuator actuated to induce an axial reciprocating movement of reaction mass relative to the elongated tube, whereby the reciprocating movement causes an acoustic wave to transmit into the elongated member, the acoustic wave being indicative of the signal.

The '365 reference does not teach or suggest an acoustic actuator or reaction mass disposed at the first location within the well borehole. As such, the '365 reference does not teach each and every element of amended claim 1 as arranged in the claim. ✓

Amended claim 23 is to a method of transmitting a signal **from a first location within a well borehole** to a second location. The claimed method includes the original limitation **"conveying into the borehole on an elongated member** having a longitudinal bore, **a reaction mass and an acoustic actuator**, the reaction mass being movably disposed on the elongated member and operatively coupled to the acoustic actuator."

As discussed above with respect to claim 1, the '365 reference does not teach or suggest an acoustic actuator or reaction mass disposed within a well borehole. Therefore, the '365 reference does not teach each and every element of amended claim 23 as arranged in the claim.

Claims 2-22 depend from amended independent claim 1 and claims 24-33 depend from amended independent claim 23. The dependent claims necessarily include all limitations of the base claim and any intervening claim, so the rejected dependent claims

are allowable for at least the same reasons as stated for the independent claims.

35 U.S.C. § 103

Claims 10, 15-17, 19 and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Petersen et al. in view of Silverman U.S. Patent 3,934,673. Claims 6-8, 12 and 30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Petersen et al. in view of Paulsson U.S. Patent 4,715,470. And claims 3-4 and 25-26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Petersen et al. in view of Bedenbender et al. U.S. Patent 4,519,053. Applicant respectfully traverses all.

With respect to all rejected claims, Applicant respectfully submits that no combination of cited art teaches an acoustic actuator and reaction mass coupled to an elongated member in a well borehole to transmit an acoustic signal in the elongated member to a second location.

As a general matter, none of the secondary references relied upon by the Examiner teaches transmitting an acoustic signal in an elongated member disposed in a well borehole. Each of these references relates to seismic sources used to transmit acoustic energy into the earth, and there is no suggestion that the same source can be used to transmit an acoustic signal into an elongated member disposed in a well borehole as claimed. Therefore, Applicant submits that the proposed combination not only fails to teach each and every element of the claimed invention, but that the proposed combination is also improper because the secondary references do not deal with the same problem addressed by the present invention or by the primary reference.

The '673 reference teaches a vibrator system for generating elastic waves in the earth. The reference clearly teaches a system incorporated into a known seismic vibrator vehicle. See column 3, lines 35-68 and column 5, lines 26-30 making reference to vehicle transport. It is thus clear that there is no suggestion to incorporate such a seismic vibrator

in a downhole acoustic transmitter for transmitting an acoustic signal through a pipe.

The '470 reference teaches a device used for seismic monitoring known as vertical seismic profiling (VSP). The reference teaches a downhole seismic source conveyed into a borehole 500 on a wireline 29 used for transmitting acoustic energy into the surrounding formation 100. There is absolutely no suggestion of using the seismic source for transmitting an acoustic signal in a pipe.

The '053 reference like the '673 reference discussed above teaches a surface vibrator used in seismic exploration. As shown in figure 1, the reference clearly teaches an improved vibrator truck. The reference, however, has no relevance to downhole acoustic transmitters and thus does not teach an acoustic actuator within a borehole for transmitting an acoustic signal in an elongated member such as a coiled tube, jointed pipe or production tube.

In order to sustain a rejection under 35 USC § 103, two requirements must be met. The first is that the limitations of the claimed invention must be taught in the prior art. This requirement is not met in the present instance. The second requirement is that there must be a teaching or suggestion in the prior art to combine the separate teachings to come up with the claimed invention.

Precisely this issue has been addressed in numerous cases by the Federal Circuit Court of Appeals.

"Prior art must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention." MPEP 2141.02; W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540 (Fed. Cir. 1983). "It is improper to combine references where the references teach away from their combination." MPEP 2145; In re Grasselli, 713 F.2d 731

(Fed. Cir. 1983). The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. MPEP 2143.01 "The factual inquiry whether to combine references must be thorough and searching." Id. It must be based on objective evidence of record. This precedent has been reinforced in myriad decisions, and cannot be dispensed with. In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). See also, Brown & Williamson Tobacco Corp. v. Philip Morris Inc., 229 F.3d 1120, 1124-25, 56 U.S.P.Q.2D (BNA) 1456, 1459 (Fed. Cir. 2000) ("a showing of a suggestion, teaching, or motivation to combine the prior art references is an 'essential component of an obviousness holding'") (quoting C.R. Bard, Inc., v. M3 Systems, Inc., 157 F.3d 1340, 1352, 48 U.S.P.Q.2D (BNA) 1225, 1232 (Fed. Cir. 1998)); In re Dembiczak, 175 F.3d 994, 999, 50 U.S.P.Q.2D (BNA) 1614, 1617 (Fed. Cir. 1999) ("Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references."); In re Dance, 160 F.3d 1339, 1343, 48 U.S.P.Q.2D (BNA) 1635, 1637 (Fed. Cir. 1998) (there must be some motivation, suggestion, or teaching of the desirability of making the specific combination that was made by the applicant); In re Fine, 837 F.2d 1071, 1075, 5 U.S.P.Q.2D (BNA) 1596, 1600 (Fed. Cir. 1988) ("teachings of references can be combined only if there is some suggestion or incentive to do so.") (emphasis in original) (quoting ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 U.S.P.Q. (BNA) 929, 933 (Fed. Cir. 1984)); (the examiner can satisfy the burden of showing obviousness of the combination "only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references"). See In re Lee, 61 U.S.P.Q.2D (BNA) 1430.

Applicant respectfully submits that the Examiner has not made a showing of the required objective teaching in the cited art of the desirability of combining any of the references teaching a seismic source for inducing acoustic energy into an earth formation with the '365 reference teaching a device disposed at or above the surface for sending an acoustic signal downhole. Consequently, Applicant submits that the Examiner has not made a prima facie case for obviousness.

CONCLUSION

For all of the foregoing reasons, applicant submits that the application is in a condition for allowance. No fee is believed due for this paper. The Commissioner is hereby authorized to charge any fee due for this response or credit any overpayment to **Deposit Account No. 02-0429 (414-12346-CIP).**

Respectfully submitted,

Date: December 29, 2003



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